

WHAT IS CLAIMED IS:

1. An absorbent structure, comprising:  
a first surface opposite a second surface, wherein the absorbent structure expands along the second surface in the presence of a liquid and increases concavity toward the first surface in the presence of a liquid, the absorbent structure expands to a lesser extent along the first surface than the absorbent structure expands along the second surface in the presence of a liquid, and the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater.
2. The absorbent structure of Claim 1, wherein the absorbent structure comprises a single layer of absorbent material.
3. The absorbent structure of Claim 2, wherein the single layer of absorbent material comprises at least one of the group consisting of thermoplastic foams, thermoset foams, cellulosic foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, non-foam materials with superabsorbent particles embedded therein, fibrous materials with superabsorbent particles embedded therein, coforms, staple fiber webs, netting, scrims, superabsorbent scrims, superabsorbent films, spunbond with superabsorbents, meltblown with superabsorbents, elastomeric materials, and combinations thereof.
4. The absorbent structure of Claim 1, wherein the first surface is a surface of a first layer and the second surface is a surface of an absorbent second layer that is bonded to the first layer, the second layer expands in the presence of a liquid and increases concavity toward the first layer along an interface of the first and second layers in the presence of a liquid, and the first layer expands to a lesser extent than the second layer expands in the presence of a liquid.

5. The absorbent structure of Claim 4, wherein the first layer comprises at least one of the group consisting of nonwoven materials, wetlaid, airlaid, spunbond, meltblown, coform, bonded-carded webs, foams, tissue, netting, scrim, woven materials, and combinations thereof.

6. The absorbent structure of Claim 4, wherein the absorbent second layer comprises at least one of the group consisting of thermoplastic foams, thermoset foams, cellulosic foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, non-foam materials with superabsorbent particles embedded therein, fibrous materials with superabsorbent particles embedded therein, coforms, staple fiber webs, netting, scrims, superabsorbent scrims, superabsorbent films, spunbond with superabsorbents, meltblown with superabsorbents, elastomeric materials, and combinations thereof.

7. The absorbent structure of Claim 1, wherein the absorbent structure has a subtended angle of about 180 degrees or less in the presence of a liquid.

8. The absorbent structure of Claim 1, wherein the absorbent structure has a radius of curvature of about 38 centimeters or less in the presence of a liquid.

9. The absorbent structure of Claim 1, wherein the absorbent structure has a basis weight between about 50 and about 1000 grams per square meter.

10. The absorbent structure of Claim 1, wherein the first surface is treated to expand less in the presence of a liquid relative to the extent to which the second surface expands in the presence of a liquid.

11. The absorbent structure of Claim 1, wherein the first surface is treated by at least one of the group consisting of necking, creping, pleating, aperturing, and mechanical teasing.

12. The absorbent structure of Claim 1, wherein at least one of the first and second surfaces comprises at least one slit to control shaping.

13. The absorbent structure of Claim 1, wherein at least one of the first and second surfaces comprises at least one region of reduced expansion.

14. The absorbent structure of Claim 13, wherein the at least one region of reduced expansion has been modified by at least one of the group consisting of densification, embossment, heat treatment, adhesive bonding, ultrasonic bonding, and combinations thereof.

15. The absorbent structure of Claim 1, wherein at least one of the first and second surfaces undergoes anisotropic expansion in the presence of a liquid.

16. The absorbent structure of Claim 1, wherein the structure has a thickness of about 10 millimeters or less.

17. An absorbent structure, comprising:  
a first layer that expands less than 10% in the presence of a liquid; and  
an absorbent second layer bonded to the first layer, wherein the absorbent second layer expands at least 20% in the presence of a liquid and increases concavity toward the first layer along an interface of the first and second layers in the presence of a liquid, and the absorbent structure has a fluid intake rate of about 0.5 cubic centimeters per second or greater.

18. The absorbent structure of Claim 17, wherein the absorbent structure has a subtended angle of about 180 degrees or less in the presence of a liquid.

19. The absorbent structure of Claim 17, wherein the absorbent structure has a radius of curvature of about 38 centimeters or less in the presence of a liquid.

20. The absorbent structure of Claim 17, wherein the structure has a thickness of about 10 millimeters or less.

21. The absorbent structure of Claim 17, wherein at least one of the first and second layers is elastomeric.

22. The absorbent structure of Claim 17, wherein the first layer has a basis weight between about 10 and about 150 grams per square meter.

23. The absorbent structure of Claim 17, wherein the absorbent second layer has a basis weight between about 100 and about 1000 grams per square meter.

24. The absorbent structure of Claim 17, wherein the first layer comprises at least one of the group consisting of nonwoven materials, wetlaid, airlaid, spunbond, meltblown, coform, bonded-carded webs, foams, tissue, netting, scrim, woven materials, and combinations thereof.

25. The absorbent structure of Claim 17, wherein the absorbent second layer comprises at least one of the group consisting of thermoplastic foams, thermoset foams, cellulosic foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, non-foam materials with superabsorbent particles embedded therein, fibrous materials with superabsorbent particles embedded therein, coforms, staple fiber webs, netting, scrims, superabsorbent scrims, superabsorbent films, spunbond with superabsorbents, meltblown with superabsorbents, elastomeric materials, and combinations thereof.

26. The absorbent structure of Claim 17, wherein the absorbent second layer comprises a superabsorbent material.

27. The absorbent structure of Claim 17, wherein at least one of the first and second layers comprises at least one slit to control shaping.

28. The absorbent structure of Claim 17, wherein at least one of the first and second layers comprises at least one region of reduced expansion.

29. The absorbent structure of Claim 28, wherein the at least one region of reduced expansion has been modified by at least one of the group consisting of densification, embossment, heat treatment, adhesive bonding, ultrasonic bonding, and combinations thereof.

30. An absorbent article, comprising:

a body side liner;

an outer cover; and

an absorbent structure positioned between the body side liner and the outer cover, wherein the absorbent structure includes a first surface opposite a second surface, the second surface of the absorbent structure is bonded to the outer cover, the absorbent structure expands along the second surface in the presence of a liquid and increases concavity toward the first surface in the presence of a liquid, and the absorbent structure expands to a lesser extent along the first surface than the absorbent structure expands along the second surface in the presence of a liquid.

31. The absorbent article of Claim 30, wherein the absorbent structure comprises a single layer of absorbent material.

32. The absorbent article of Claim 31, wherein the single layer of absorbent material comprises at least one of the group consisting of thermoplastic foams, thermoset foams, cellulosic foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, non-foam materials with superabsorbent particles embedded therein, fibrous materials with superabsorbent particles embedded therein, coforms, staple fiber webs, netting, scrims, superabsorbent scrims, superabsorbent films, spunbond with superabsorbents, meltblown with superabsorbents, elastomeric materials, and combinations thereof.

33. The absorbent article of Claim 30, wherein the first surface is a surface of a first layer and the second surface is a surface of an absorbent second layer that is bonded to the first layer, the second layer expands in the presence of a liquid and increases concavity toward the first layer along an interface of the first and second layers in the presence of a liquid, and the first layer expands to a lesser extent than the second layer expands in the presence of a liquid.

34. The absorbent article of Claim 33, wherein the first layer comprises at least one of the group consisting of nonwoven materials, wetlaid, airlaid, spunbond, meltblown, coform, bonded-carded webs, foams, tissue, netting, scrim, woven materials, and combinations thereof.

35. The absorbent article of Claim 33, wherein the absorbent second layer comprises at least one of the group consisting of thermoplastic foams, thermoset foams, cellulosic foams, superabsorbent foams, foam materials with superabsorbent particles embedded therein, non-foam materials with superabsorbent particles embedded therein, fibrous materials with superabsorbent particles embedded therein, coforms, staple fiber webs, netting, scrims, superabsorbent scrims, superabsorbent films, spunbond with superabsorbents, meltblown with superabsorbents, and combinations thereof.

36. The absorbent article of Claim 30, wherein the first surface is treated to expand less in the presence of a liquid relative to the extent to which the second surface expands in the presence of a liquid.

37. The absorbent article of Claim 36, wherein the first surface is treated by at least one of the group consisting of necking, creping, pleating, aperturing, and mechanical teasing.

38. The absorbent article of Claim 30, wherein the second surface expands at least 20% in the presence of a liquid.

39. The absorbent article of Claim 30, wherein the absorbent article comprises at least one of the group consisting of personal care absorbent articles and medical absorbent articles.

40. The absorbent article of Claim 30, wherein the absorbent article comprises at least one of the group consisting of diapers, training pants, swimwear, absorbent underpants, child-care pants, adult incontinence products, pads, containers, urinary shields, feminine hygiene products, sanitary napkins, menstrual pads, panty liners, panty shields, interlabials, tampons, medical absorbent garments, drapes, gowns, bandages, wound dressings, underpads, bed pads, cleaning applications, clothing components, filters, athletic and recreation products, construction products, and packaging products.